A method for modulating a disease or condition associated with phospholipase D (PLD) initiated polymorphoneutrophil (PMN) inflammation in a subject, comprising

administering to the subject an effective anti-inflammatory amount of a lipoxin analog having the formula

$$\begin{array}{c|c} Q_4H & Q_3H & R_2 \\ \hline \\ R_4 & R_5 & R_3 \\ \hline \\ R_6 & Y_1 & \end{array}$$

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

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 $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl;

- (vii) a detectable label molecule; or
- (viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms. inclusive:

wherein  $Q_1$  is (C=O), SO<sub>2</sub> or (CN), provided when  $Q_1$  is CN, then X is absent; wherein  $Q_3$  and  $Q_4$  are each independently O, S or NH; wherein one of R, and R<sub>3</sub> is a hydrogen atom and the other is

- (a) H;
- an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched;
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive;
- an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>a</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>a</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R<sub>b</sub> is 0, then R<sub>b</sub> is a hydrogen atom:

wherein R4 is

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- (a) H;
- an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched;

30 wherein R<sub>5</sub> is

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ij}$ ,  $Z_{ij}$ , and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H;
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof, such that a disease or condition associated with PLD initiated polymorphoneutrophil (PMN) inflammation in a subject is modulated.

- 2. The method of claim 1, wherein said method is performed in vitro.
- The method of claim 1, wherein said method is performed in vivo.

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 A method for treating phospholipase D (PLD) initiated polymorphoneutrophil (PMN) inflammation in a subject, comprising

administering to the subject an effective anti-inflammatory amount of a lipoxin analog having the formula

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

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wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to

8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl;

- (vii) a detectable label molecule; or
- (viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive;

wherein  $Q_1$  is (C=O), SO<sub>2</sub> or (CN), provided when  $Q_1$  is CN, then X is absent; wherein  $Q_3$  and  $Q_4$  are each independently O, S or NH; wherein one of  $R_2$  and  $R_3$  is a hydrogen atom and the other is

- (a) H;
- an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched;
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive;
- (d) an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>a</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>a</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R<sub>b</sub> is 0, then R<sub>b</sub> is a hydrogen atom;

## wherein R4 is

- (a) H;
- (b) an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched:

wherein R5 is

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wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

## wherein R6 is

- (a) H
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof, such that PLD initiated polymorphoneutrophil (PMN) inflammation is treated in a subject.

- 5. The method of claim 1, wherein said method is performed in vitro.
- 6. The method of claim 1, wherein said method is performed in vivo.

 A method for modulating a disease or condition associated with phosphlipase D (PLD) initiated superoxide generation or degranulation activity in a subject, comprising

administering to the subject an effective anti-PLD amount of a lipoxin analog having the formula

$$\begin{array}{c|c} Q_4H & R_2 \\ \hline \\ R_4 & R_5 \\ \hline \\ R_6 & Y_1 \\ \end{array}$$

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

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- -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hvdroxv1:
  - (vii) a detectable label molecule; or
  - (viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive;

wherein Q<sub>1</sub> is (C=O), SO<sub>2</sub> or (CN), provided when Q<sub>1</sub> is CN, then X is absent; wherein Q3 and Q4 are each independently O, S or NH; wherein one of R, and R, is a hydrogen atom and the other is

- (a) H:
- (b) an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched:
- a cycloalkyl of 3 to 6 carbon atoms, inclusive: (c)
- (d) an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>2</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>3</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R, is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R, is 0, then R, is a hydrogen atom;

wherein R4 is

- (a) H:
- (b) an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched:
- wherein Rs is

 $Z_{ij}$   $Z_{ij}$   $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_zZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

## wherein R6 is

- (a) H;
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof, such that a disease or condition associated with PLD initiated superoxide generation or degranulation activity in a subject is modulated.

- 8. The method of claim 7, wherein said method is performed in vitro.
- 9. The method of claim 7, wherein said method is performed in vivo.

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10. A method for treating phospholipase D (PLD) initiated superoxide generation or degranulation in a subject, comprising

administering to the subject an effective anti-PLD amount of a lipoxin analog having the formula

$$Q_4H$$
 $Q_3H$ 
 $Q_3H$ 
 $Q_3H$ 
 $Q_4H$ 
 $Q_3H$ 
 $Q_4H$ 
 $Q_3H$ 
 $Q_4H$ 
 $Q_5H$ 
 $Q_5H$ 

wherein X is R<sub>1</sub>, OR<sub>1</sub>, or SR<sub>1</sub>; wherein R, is

- (i) a hydrogen atom;
- an alkyl of 1 to 8 carbons atoms, inclusive, which may (ii) be straight chain or branched:
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- substituted phenyl (vi)

wherein  $Z_{i}$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_{v}$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)- $R_1$ , -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -O $R_x$ , wherein  $R_x$  is 1 to hvdroxvl:

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(a) H;

(a) 11

(b) an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched:

(viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive:

wherein  $Q_1$  is (C=O), SO<sub>2</sub> or (CN), provided when  $Q_1$  is CN, then X is absent; wherein  $Q_3$  and  $Q_4$  are each independently O, S or NH; wherein one of  $R_2$  and  $R_3$  is a hydrogen atom and the other is

a detectable label molecule; or

(a) H;

(vii)

- (b) an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched:
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive;
- an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>a</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>a</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R<sub>b</sub> is 0, then R<sub>b</sub> is a hydrogen atom;

wherein R<sub>5</sub> is

wherein R4 is

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$$Z_{ij}$$
 $Z_{ij}$ 
 $Z_{ij}$ 
 $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H;
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof, such that PLD initiated superoxide generation or granulation is treated in a subject.

- 11. The method of claim 10, wherein said method is performed in vitro.
- 12. The method of claim 10, wherein said method is performed in vivo.
- A packaged pharmaceutical composition for treating a disease or condition associated with phospholipase D (PLD) initiated activity in a subject, comprising:

a container holding a therapeutically effective amount of at least one lipoxin compound having the formula

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms:
- (v) phenyl;
- (vi) substituted phenyl

$$Z_{ij}$$
 $Z_{ij}$ 
 $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ij}$ ,  $Z_{ij}$ , and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and

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hydroxyl;

(vii) a detectable label molecule; or

(viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive;

wherein  $Q_1$  is (C=O), SO<sub>2</sub> or (CN), provided when  $Q_1$  is CN, then X is absent; wherein  $Q_3$  and  $Q_4$  are each independently O, S or NH; wherein one of  $R_2$  and  $R_3$  is a hydrogen atom and the other is

- (a) H;
- an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched;
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive;
- an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>a</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>a</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R<sub>b</sub> is 0, then R<sub>b</sub> is a hydrogen atom;

wherein R4 is

- (a) H;
- an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched;

wherein R5 is

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$$Z_{i}$$
 $Z_{ii}$ 
 $Z_{ij}$ 
 $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{iii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein Y1 is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or CH<sub>a</sub>Z<sub>b</sub> where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H:
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:
- wherein T is O or S, and pharmaceutically acceptable salts thereof; and instructions for using said lipoxin compound for treating a disease or condition associated with PLD initiated activity in the subject.

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14. A packaged pharmaceutical composition for treating phospholipase D initiated activity in a subject, comprising:

a container holding a therapeutically effective amount of at least one lipoxin compound having the formula

$$\begin{array}{c|c} Q_4H & Q_3H & R_2 \\ \hline \\ R_4 & R_5 & R_3 \\ \hline \\ R_6 & Y_1 & \end{array}$$

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms:
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$ , and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to

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8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl;

- (vii) a detectable label molecule; or .
- (viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive:

wherein Q<sub>1</sub> is (C=O), SO<sub>2</sub> or (CN), provided when Q<sub>1</sub> is CN, then X is absent; wherein Q3 and Q4 are each independently O, S or NH; wherein one of R2 and R3 is a hydrogen atom and the other is

- (a) H;
- (b) an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched:
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive;
- (d) an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched: or
- (e)  $R_aQ_2R_h$  wherein  $Q_2$  is -O- or -S-; wherein  $R_a$  is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R, is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R. is 0, then R. is a hydrogen atom;

wherein R. is

- (a) H;
- an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight (b) chain or branched;

wherein R5 is

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wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ij}$ ,  $Z_{ij}$ , and  $Z_v$  are each independently selected from  $-NO_2$ , -CN,  $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H;
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof; and instructions for using said lipoxin compound for treating PLD initiated activity in the subject.

- 15. A packaged pharmaceutical composition for treating a disease or condition associated with phospholipase D (PLD) initiated superoxide generation or degranulation activity in a subject, comprising:
- a container holding a therapeutically effective amount of at least one lipoxin compound having the formula

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$$Q_4H$$
 $Q_5H$ 
 $Q_5H$ 

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

$$Z_{ij}$$
 $Z_{ij}$ 
 $Z_{ij}$ 
 $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{v}$  and  $Z_{v}$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=0)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl;

(vii)

a detectable label molecule: or

(viii)

a straight or branched chain alkenyl of 2 to 8 carbon

atoms, inclusive:

wherein Q<sub>1</sub> is (C=O), SO<sub>2</sub> or (CN), provided when Q<sub>1</sub> is CN, then X is absent; wherein Q3 and Q4 are each independently O, S or NH; wherein one of R<sub>2</sub> and R<sub>3</sub> is a hydrogen atom and the other is

- (a) H;
- (b) an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched:
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive:
- (d) an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched: or
- (e)  $R_aQ_2R_b$  wherein  $Q_2$  is -O- or -S-; wherein  $R_a$  is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when Rh is 0, then Rh is a hydrogen atom:

wherein R<sub>4</sub> is

- (a) H;
- (b) an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched:

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$$z_i$$
 $z_{ii}$ 
 $z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ii}$ ,  $Z_{iv}$  and  $Z_v$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H:
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched;

wherein T is O or S, and pharmaceutically acceptable salts thereof; and instructions for using said lipoxin compound for treating a disease or condition associated with PLD initiated superoxide generation or degranulation activity in the subject.

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16. A packaged pharmaceutical composition for treating phospholipase D (PLD) initiated superoxide generation or degranulation activity in a subject, comprising: a container holding a therapeutically effective amount of at least one lipoxin compound having the formula

$$Q_4H$$
 $Q_3H$ 
 $R_2$ 
 $Q_3H$ 
 $R_4$ 
 $R_5$ 
 $R_8$ 
 $R_8$ 

wherein X is  $R_1$ ,  $OR_1$ , or  $SR_1$ ; wherein  $R_1$  is

- (i) a hydrogen atom;
- (ii) an alkyl of 1 to 8 carbons atoms, inclusive, which may be straight chain or branched;
- (iii) a cycloalkyl of 3 to 10 carbon atoms;
- (iv) an aralkyl of 7 to 12 carbon atoms;
- (v) phenyl;
- (vi) substituted phenyl

$$Z_{ij}$$
 $Z_{ij}$ 
 $Z_{ij}$ 
 $Z_{ij}$ 

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 $-C(=O)-R_1$ ,  $-SO_3H$ , a hydrogen atom, halogen, methyl,  $-OR_x$ , wherein  $R_x$  is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl;

- (vii) a detectable label molecule; or
- (viii) a straight or branched chain alkenyl of 2 to 8 carbon atoms, inclusive;

wherein  $Q_1$  is (C=O),  $SO_2$  or (CN), provided when  $Q_1$  is CN, then X is absent; wherein  $Q_3$  and  $Q_4$  are each independently O, S or NH; wherein one of  $R_2$  and  $R_3$  is a hydrogen atom and the other is

- (a) H;
- an alkyl of 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched;
- (c) a cycloalkyl of 3 to 6 carbon atoms, inclusive:
- an alkenyl of 2 to 8 carbon atoms, inclusive, which may be straight chain or branched; or
- (e) R<sub>2</sub>Q<sub>2</sub>R<sub>b</sub> wherein Q<sub>2</sub> is -O- or -S-; wherein R<sub>a</sub> is alkylene of 0 to 6 carbons atoms, inclusive, which may be straight chain or branched and wherein R<sub>b</sub> is alkyl of 0 to 8 carbon atoms, inclusive, which may be straight chain or branched, provided when R<sub>b</sub> is 0, then R<sub>b</sub> is a hydrogen atom:

wherein R4 is

- (a) H:
- an alkyl of 1 to 6 carbon atoms, inclusive, which may be a straight chain or branched;
- wherein R<sub>5</sub> is

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$$Z_{ij}$$
 $Z_{ij}$ 
 $Z_{ij}$ 

wherein  $Z_i$ ,  $Z_{ii}$ ,  $Z_{ij}$ ,  $Z_{ij}$ , and  $Z_v$  are each independently selected from -NO<sub>2</sub>, -CN, -C(=O)-R<sub>1</sub>, -SO<sub>3</sub>H, a hydrogen atom, halogen, methyl, -OR<sub>x</sub>, wherein R<sub>x</sub> is 1 to 8 carbon atoms, inclusive, which may be a straight chain or branched, and hydroxyl or a substituted or unsubstituted, branched or unbranched alkyl group;

wherein  $Y_1$  is -OH, methyl, -SH, an alkyl of 2 to 4 carbon atoms, inclusive, straight chain or branched, an alkoxy of 1 to 4 carbon atoms, inclusive, or  $CH_aZ_b$  where a+b=3, a=0 to 3, b=0 to 3 and Z is cyano, nitro or a halogen;

wherein R6 is

- (a) H:
- (b) an alkyl from 1 to 4 carbon atoms, inclusive, straight chain or branched:

wherein T is O or S, and pharmaceutically acceptable salts thereof; and instructions for using said lipoxin compound for treating PLD initiated superoxide generation or degranulation activity in the subject.